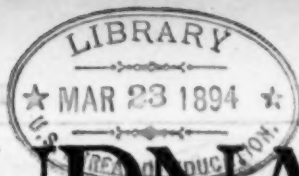


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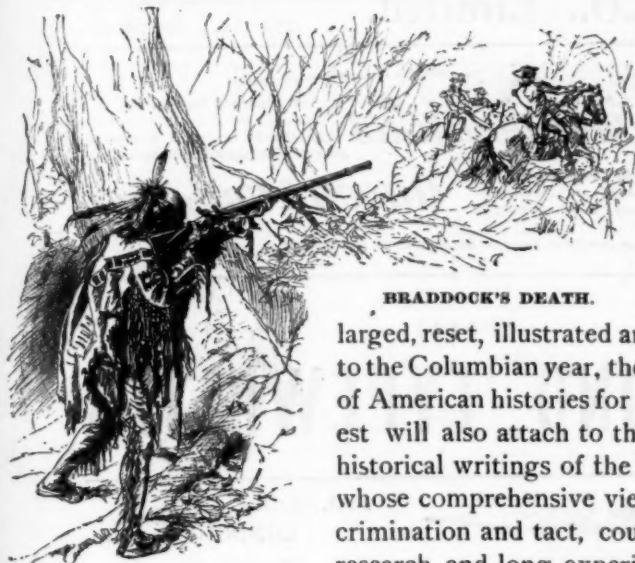
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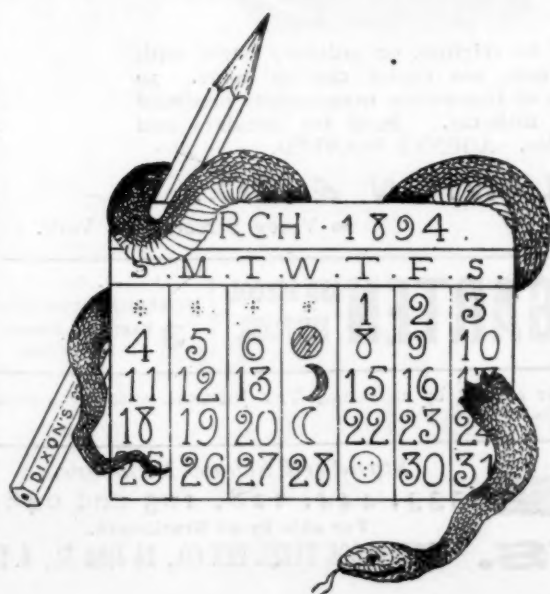
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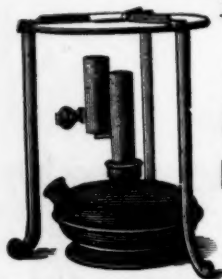
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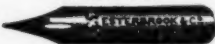
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A Weekly Journal of Education.

Vol. XLVIII.

For the Week Ending March 24.

No. 12

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The business department of THE JOURNAL is on page 315.

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HIS unusually mild month of March brings busy thoughts of summer, and how it is to be spent. Teachers should go into other occupations for a year or two to fully appreciate the length of their summer vacations. Nerve-wearing as is the work of the classroom, it offers no sufficient excuse for spending from two to three months in utter idleness without an attempt to gather anything in the way of new light and new material for the next year's work. Three weeks at a summer school freshens body and soul alike if it is well used. A good deal of the nerve wear teachers complain of comes out of the dreariness of the work and means nerve wear for the children as well as the teachers. *School work need not be dreary.* Dreary teachers must brighten up their methods. There is nothing that can help them do this like a good summer school.

The cause of morality cannot be served by preaching it into the ears of young children. Goody-goody stories weary the young and turn their sympathies away from right doing. A moral explained and "rubbed in" loses its tonic effect and results rather in moral enervation. Examples of noble conduct, embodied in interesting stories, are probably among the best means at the teacher's command for cultivating the moral nature. But the less said about them, the better. The impatient child turns from moral lecturing in a very unethical spirit. The patient child learns to tolerate the preaching. The time-serving child practices insincerity in pretending to enjoy the story and admire its hero. But enthusiasm for the right is not cultivated in any type of child by this course.

"The water gets up in the air and evaporates." So says a little girl in answer to the question, "What becomes of the water, when the clothes dry?" She knows what becomes of the water. Does she know the use of the term *evaporates*? Or does she think it means "vanishes"? She has seen vapor rise and thin to invisibility, and the construction of her sentence seems to indicate that this disappearance of the vapor is what we mean by evaporation. Or was the big word an after-thought which the crudity of childish composition allowed to tack itself on to the sentence out of its place? Her statement is funny, and the mistake it contains is natural and forgivable, whether it involves an error of conception or only a loose sentential construction. Children's errors are full of suggestion as to children's needs. Do not let them make any more than you can help. Study those that they make in spite of you.

The first two great things to do are to win your community and win your school. To do this, you must meet your people on their own plane. It is a good thing to take for granted that they know a little more than they do, but don't take it too plainly for granted that *you* know a great deal more than they do, or that their knowledge is of little value. Ignorant people often have a hard, "horse sense" that is worth a good deal to them, and in which they believe most thoroughly. If you appeal to this, you win their friendship and often their support through vicissitudes that place you, learned pedagogue though you may be, at their mercy. Win your school through your community and your community through your school. Speak respectfully of parents to children, and if you have occasion to complain of pupil to parent, begin by praising the child for something.

The motives stirred in the young by ambitious relatives and teachers are not always ethical. "*Be something!*" is said to the boy in tones meant to rouse all the self-conceit he is capable of feeling. "Do something for somebody," would be better. It is not every boy who enters with energy upon the task of getting an education that does so with any high motive. In "Our Mutual Friend," Dickens gives an instance of ambition to be educated and to "amount to something" in a most despicable character. Sordid ambition will set even the young to work at long and dreary tasks, but it is not the right motive for teachers to appeal to. Teach, rather, the Golden Rule, with its universal applications, and incite your pupils to want to do the most good in the world that the highest cultivation of their powers can enable them to do.

It is safe to say that the methods of the New Education are not understood by teachers whose pupils do not learn to spell correctly. Bad spelling means bad teaching, somewhere, however high the motive and earnest the endeavor of the teacher. The *raison d'être* of the New Education is that old standards were too low. Do not, then, let us lower any of them in the name of the New Education. The school which is applying the New Education in all its purity most successfully of any in the United States is the Cook County normal school. The pupils of the higher grades in that school are exceptionally good spellers. Teachers should look sharply to their own spelling and should study the best methods of teaching spelling. A poor speller should do much careful copying of text. Frequent reference to the dictionary is essential.

The end of man is an *action*, not a thought.

—Carlyle.

"Nature my college, the tree my principle, the nursery my university, the children my professors."

—Johann Friedrich Frabel.

Teaching Literature.

By MORRISON H. CALDWELL.

The maxim of the New Education, "We learn to do by doing," is nowhere more applicable than in the teaching of English literature. We learn literature by reading literature. If a friend should point with pride to a fine assortment of pickles, jellies, jams, and preserves, each having its peculiar flavor or special merit, and should by word-painting attempt to tell us the difference between the flavor of raspberry jam and the flavor of strawberry jam, we should think her somewhat unreasonable to require us to distinguish between and these flavors, without giving us an opportunity to taste her products. Equally absurd is it for teachers of English literature to require their pupils to memorize opinions about books which they are not given an opportunity to read. Pupils should be permitted to taste the sweets of literature, even if their judgment is not infallible. Certainly they will have a more correct notion as to the merits and nature of the masterpieces and their taste will be cultivated.

Literary taste is an acquired taste. The reading of good literature will develop a love of good reading, and a habit of reading is a liberal education. Mere extracts are uninteresting and misleading. A much better plan is to study only the leading authors and the leading work of each. This can be accomplished, and the advantage of knowing the masterpieces by personal perusal, is not for a moment to be compared to the absurd cramming of dates and facts concerning all writers, regardless of their importance. The writer has not yet seen a text-book emphasizing or embodying the above idea, and has been compelled to formulate a course in literature for the use of his classes. So satisfactory have been the results obtained by this method that he feels it his duty to give an outline of his plan as a suggestion to fellow-teachers. He sincerely hopes some one will improve upon this plan and give us a text-book adapted to high schools. Instead of wasting time in studying about minor authors, all pupils were given the leading works of leading authors and required to read them. A brief biography of each author was placed on the blackboard and copied for recitation.

A preliminary lecture upon the earlier writers was followed by the study of the following: Chaucer (Prologue Canterbury Tales); Sir Thomas More (Utopia); Spencer (Faerie Queene, five cantos); Shakespeare (Julius Cæsar, Merchant of Venice); Bacon (Essays); Bunyan (Pilgrim's Progress); Milton (L'Allegro, Il Penseroso); Addison (Essays); Defoe (Robinson Crusoe); Pope (Essay on Man); Gray (Elegy in Country Churchyard); Goldsmith (Deserted Village); Burke (Essay on Taste); Burns (Cotter's Saturday Night); Scott (Lady of the Lake); Coleridge (Ancient Mariner); Dickens (David Copperfield); Bulwer (Last Days of Pompeii); Carlyle (Choice of Books); Tennyson (In Memoriam, Locksley Hall); Browning (Pied Piper of Hamelin); Ruskin (Modern Painters); Macaulay (Essay on Milton); The Historians (Gibbon, Macaulay, and Green compared); Irving (Sketch Book); Emerson (Essays); Hawthorne (Tales of White Hills; Poe (Raven); Longfellow (Evangeline); Whittier (Snow Bound); Holmes (Autocrat of the Break-Table); Lew Wallace (Ben Hur).

Pupils were encouraged to state their reasons for enjoying certain poems, so that a criticism was evoked which was less infallible but more beneficial than that which pupils are sometimes required to memorize. The members of the class were provided with cheap paper—back editions of the works studied which cost in the aggregate but little more than the average text-book. Many of these poems were read by teacher and class at the recitation period and discussed, while others were made the subjects of essays. So great was the enthusiasm awakened and the love of literature aroused that the discussion of the books being read, became the daily topic at noon recess, instead of an exchange of gossip. One pupil, a boy fifteen years of age, had read no books except Robinson Crusoe and a

Life of Jesse James. Another boy, fourteen years of age, had read only Robinson Crusoe and a Life of Stanley.

What benefit would it have been to these boys to glibly recite the pages of the text-books, without reading the books about which the text-book treated? This shows the necessity of inducing young people to acquire a habit of reading only the best books. This is a part of the child's education which has not received proper attention. The teacher can do nothing better for his pupil than to send him forth with a correct notion as to what he should read. The victims of dime novels and sensational newspaper articles, are filling our prisons, while bright boys are daily driven to a neglect of good reading by the failure of teachers to assume the direction of this part of their education. The gardens of literature should not be surrounded by medieval walls, but they should be free to both rich and poor. In these gardens they will find food ambrosial and drink of the nectar of the gods. Here grow flowers that distill sweets surpassing the honey of Hymettus; here flow fountains that mirror the beauty of Eden, and make music more entrancing than ever rippled down the vine-clad mount of the Muses. To this Temple of Mind our American teachers should admit all their pupils.

English and Mathematics in the Lower Schools.

[Reports of the respective conferences on these subjects to the Committee of Ten.]

Jan. 1, 1894, W. T. Harris, the United States commissioner of education made public the report of the Committee of Ten on secondary school studies—appointed at the meeting of the National Educational Association, held in July, 1892, at Saratoga N.Y. This Committee of Ten consisted of the following well-known educators: Charles W. Eliot, president of Harvard university, Cambridge, Mass., chairman; William T. Harris, commissioner of education, Washington, D. C.; James B. Angell, president of the University of Michigan, Anna Arbor, Mich.; John Tetlow, head master of the Girls' high school and the Girls' Latin school, Boston, Mass.; James M. Taylor, president of Vassar college, Poughkeepsie, N. Y.; Oscar D. Robinson, principal of the high school, Albany, N.Y.; James H. Baker, president of the University of Colorado, Boulder, Colo.; Richard H. Jesse, president of the University of Missouri, Columbia, Mo.; James C. Mackenzie, head master of the Lawrenceville school, Lawrenceville, N. J.; Henry C. King, professor in Oberlin college, Oberlin, Ohio.

This Committee of Ten decided to organize conferences on the following subjects: 1. Latin; 2. Greek; 3. English; 4. Other Modern Languages; 5. Mathematics; 6. Physics, Astronomy, and Chemistry; 7. Natural History (Biology, including Botany, Zoölogy and Physiology); 8. History, Civil Government, and Political Economy; 9. Geography (Physical Geography, Geology, and Meteorology). They also decided that each conference should consist of ten members. A list of eleven questions was adopted as a guide for the discussions at the conferences, which were held on December 28, 1892, each in a different city.

ENGLISH.

To the Committee of Ten:—The conference on the study of English has the honor to submit the following report:

The main direct objects of the teaching of English in schools seems to be two: (1) to enable the pupil to understand the expressed thought of others and to give expression to thoughts of his own; and (2) to cultivate a taste for reading, to give the pupil some acquaintance with good literature, and to furnish him with the means of extending that acquaintance.

If the pupil is to secure control of the language as an instrument for the expression of his thoughts it is necessary (1) that, during the period of life when imita-

tion is the chief motive principle in education, he should be kept so far as possible away from the influence of bad models and under the influence of good models, and (2) that every thought which he expresses whether orally or on paper, should be regarded as a proper subject for criticism as to language. Thus every lesson in geography, or physics, or mathematics, may and should become a part of the pupil's training in English. There can be no more appropriate moment for a brief lesson in expression than the moment when the pupil has something which he is trying to express. If this principle is not regarded, a recitation in history or in botany, for example, may easily undo all that a set exercise in English has accomplished. In order that both teach and pupil may attach due importance to this incidental instruction in English, the pupils standing in any subject should depend in part on his use of clear and correct English.

"Language" and Composition.—During the first two years at school, children may acquire some fluency of expression by reproducing orally in their own words stories told them by their teachers and by inventing stories about objects and pictures.

Not later than the first term of the third school-year children should begin to compose in writing. To assist them in overcoming mechanical difficulties (as of punctuation, the use of capitals, etc.), they should be required to copy and to write from dictation and from memory short and easy passages of prose and verse.

From the beginning of the third school year, "language-work" should be of three kinds:

1. Oral and written exercises in the correct employment of the forms of the so-called "irregular" verbs, of pronominal forms, and of words and phrases frequently misused.

2. Oral and written exercises in the most elementary form of composition, that is, in the construction of sentences of various kinds. The matter out of which the sentences are to be constructed may, if necessary, be supplied by the teacher; but the pupil should, from his earliest years be encouraged to furnish his own material, expressing his own thoughts in a natural way.

3. The writing of narratives and descriptions.

Spelling should be learned incidentally in connection with every subject studied, and not from a spelling-book.

Reading or Lessons in Literature.—From the beginning of the third year at school, the pupil should be required to supplement his regular reading-book with other reading-matter of a distinctly literary kind. Children should be taught to read distinctly and with expression, but without exaggeration or mannerisms. They should be taught to comprehend the subject-matter as a whole and to grasp the significance of parts, as well as to discover and appreciate beauties of thought and expression. Due attention should be paid to what are sometimes thoughtlessly regarded as points of pedantic detail, such as the elucidation of involved sentences, the expansion of metaphors, into similes and the compression of similes into metaphors, the tracing of historical and other references, and a study of denotation and connotation of single words. Such details are necessary if the pupil is to be brought to anything but the vaguest understanding of what he reads, and there is no danger that an intelligent teacher will allow himself to be dominated by them. It should not be forgotten that in these early years of his training the pupil is forming habits of reading and of thought which will either aid him for the rest of his life, or of which he will by-and-by have to cure himself with painful effort.

Samuel Thurber, master of the Girls' high school, Boston, Mass., chairman; George Lyman Kittredge, Prof., Harvard university, Cambridge, Mass., secretary; Edw. A. Allen, professor, University of Missouri, Columbia, Mo.; F. A. Barbour, principal, Michigan state normal school, Ypsilanti, Mich.; F. A. Blackburn, professor, University of Chicago, Chicago, Ill.; C. B. Bradley, professor, University of California, Berkeley, Cal.; Francis B. Grunmere, professor, Haverford college, Pa.; Edward E. Hale, Jr., professor, University of Iowa,

Iowa City, Ia.; Charles L. Loos, Jr., high school, Dayton, O.; Wm. H. Maxwell, superintendent of schools, Brooklyn, N. Y.

MATHEMATICS.

March, 1893.

To President Charles W. Eliot, chairman Committee of Ten, National Council of Education.

The following reports are submitted;

Very respectfully.

Simon Newcomb, professor, Johns Hopkins university, Baltimore, Md., chairman; Wm. E. Byerly, professor, Harvard university, Cambridge, Mass., Vice-Ch.; Arthur H. Cutler, principal of a private school for boys, 20 E. 50th St. N. Y. city; Florian Cajori, professor, Colorado college, Colorado Springs, Colo.; Henry B. Fine, professor, College of N. Jersey, Princeton, N. J.; W. A. Greeson, principal of the high school, Grand Rapids, Mich.; Andrew Ingraham, Swain free school, New Bedford, Mass.; George D. Olds, professor, Amherst college, Amherst, Mass.; James L. Patterson, Lawrenceville school, Lawrenceville, N. J.; S. H. Safford, professor, Williams college, Williamstown, Mass.

To President Charles W. Eliot, chairman committee of ten, National Council of Education.

I. GENERAL STATEMENT OF CONCLUSIONS.

The method of teaching should be throughout objective, and such as to call into exercise the pupil's mental activity. The text-books should be subordinate to the living teacher. The illustrations and problems should, so far as possible, be drawn from familiar objects; and the scholar himself should be encouraged to devise as many as he can. So far as possible, rules should be derived inductively, instead of being stated dogmatically. On this system the rules will come at the end, rather than at the beginning, of a subject.

The conference at the same time insists upon the importance of practice in quick and accurate reckoning. The scholar should be thoroughly trained in performing correctly and rapidly the four fundamental operations.

The course in arithmetic thus mapped out should begin about the age of six years.

II. SPECIAL REPORT ON ARITHMETIC.

Most of the improvements which the conference has to suggest in teaching can be summed up under the two heads of giving the teaching a more concrete form, and paying more attention to facility and correctness in work. The relations of magnitudes should, so far as possible, be represented to the eye. The fundamental operations of arithmetic should not only be performed symbolically by numbers, but practically, by joining lines together, dividing them into parts, and combining the parts in such a way as to illustrate the fundamental rules for multiplication and division of fractions. A pupil can learn to divide a line into parts more easily than he can master definitions; and when this is done he has a conception of fractions which he cannot gain in any other way. The visible figures by which principles are illustrated should, so far as possible, have no accessories. They should be magnitudes pure and simple, so that the thought of the pupil may not be distracted and that he may know what feature of the thing represented he is to pay attention to. The elementary theorems of arithmetic should be enforced and illustrated in the same way, without an attempt at formal demonstration, the generalization being reached inductively. Thus, the pupil comprehends clearly, by means of dots arranged in a rectangle, that three five's contain the same number of units as five three's, that is, when he sees that the commutative law is true, then it may be expressed to him in the general form, $a \times b = b \times a$.

The simple operations of arithmetic can be better exemplified by problems set on the spur of the moment, and springing naturally from the environment of teacher and pupil than by those given in a printed book; and have the inestimable advantage of exciting the interest of the pupil.

When such a system of teaching is once introduced, the teacher will probably be surprised to find to what seemingly abstruse problems the simplest principles of

arithmetic can be applied. The problem of computing the quantity of coal which would have to be burned in order to heat the air of the room from the freezing point to 70° would probably be beyond the powers of all our college graduates, except those who have made physics one of their specialties. Yet there is nothing in its elements above the powers of a boy of twelve. At this age the child could, by a few very simple experiments, gain the idea of a quantity of heat much more easily than the idea of stock in a corporation. Having gained this, the elements which enter into the problem in question could be measured one by one.

III. SPECIAL REPORT ON CONCRETE GEOMETRY.

The conference recommends that the child's geometrical education should begin as early as possible; in the kindergarten, if he attends a kindergarten, or if not, in the primary school. He should at first gain familiarity through the senses with simple geometrical figures and forms, plane and solid; should handle, draw, measure, and model them; and should learn some of their simpler properties and relations. It is the opinion of the conference that in the early years of the primary school this work should be done in connection with the regular courses in drawing and modeling without requiring any important modification of the school curriculum.

From the outset the pupil should be required to express himself verbally as well as by drawing and modeling, and the language employed should be as far as possible, the language of science, and not a temporary phraseology to be unlearned later.

Get Hold of the Heart.

By E. L. B.

Miss W— taught a district school. It was the winter term and the big boys were beginning to come. Among the "new scholars" one day was Harry G— who worked for his board at a farmer's in the district.

Harry appeared to be a good-natured boy, but not very studious. His eyes were constantly wandering over the school-room in search of entertainment. If spoken to he only laughed and looked at his book for a moment. All efforts to arouse his ambition failed of results.

While Miss W— was meditating a quiet talk with the boy, he committed a misdemeanor on the playground which was reported and had to be reprimanded. Harry showed anger and resentment on being reproved. The quiet talk was therefore delayed for a more favorable opportunity.

The next Monday morning Harry was absent. It was reported that he had run away. The name of the place and person where he had probably gone were also reported, and Miss W. feeling considerable remorse for not having gotten a hold on the boy before, wrote him a letter, and without knowing that it would ever reach him, mailed it to the place where he was supposed to have gone.

A few days afterward Harry came back to school. He was very quiet and studious the first day, and on leaving the room at night, handed Miss W— a letter. After thanking her for writing him and saying that it was the first time any one had shown so much interest in him since he was a child, the letter went on to give a history of the boy's life. Left an orphan at a very early age he was adopted into a family where he was at times kindly treated, at other times harshly. When only twelve years old this family was broken up, and he was left to shift for himself. Most of the time he had worked for his board among people whose only interest in him was to get as much work out of him as possible.

The letter closed with a pathetic expression of a determination to lead a better life, which determination was most faithfully kept. Never again during the remainder of the term was Miss W— obliged to correct Harry for the least thing. He took up his studies with energy, and was kind and helpful in influencing rightly the other children. When the last day of the winter term arrived, he went back to work upon the

farm, but with a determination to earn money for an education.

That winter term of school proved to be the turning point in Harry G's life. He is now a lawyer, but declares that he should have been a loafer if Miss W— had not written him that letter which touched his heart and roused in him an ambition to a better life.

Character in Hiding.

By RANDALL NEEFUS SAUNDERS.

I have long felt that a backward glance, through the absolute results in characters of men about me, might be beneficial to us, who in our zeal often feel that the very essence of our best labor is lost.

I am a great admirer of a certain young mechanic,— of his intense feeling of moral obligation as a citizen, and of his strong sentiment of spiritual responsibility. And his present development has often been a matter for wonder to me; for, from early life, he has been thrown among associations that have wrecked thousands. It was all clear to me the other day, however, when I stepped into his shop, unnoticed, and found him talking to himself.

What was he saying? Was it a passage from "The Sikh War" which he was then reading, in leisure hours? Was it a section of "The Wilson Bill" in which he is deeply interested?

No, it was the concluding line of a temperance poem in one of the old "Sanders" readers. Finishing, he turned and beheld me.

"Ah, Saunders, listening to my declamation, eh? Well, I didn't think you would turn eavesdropper," he said jokingly; and continuing, "Do you know, all the pieces in my old reading books come back to me, as I work here at the bench?"

"There's 'The Rapids are Before You' and 'The Little Boy that Died,' and the old fables and proverbs and a host of things I never understood at school, whose meaning comes now in a flash.

"Say, I don't believe you teachers pay enough attention to reading. Now, I'll tell you what I mean,—you don't explain the lesson as carefully as you ought, that is, they didn't when I went to school.

"I was a first-rate reader,—could call the words and mind the punctuation; but I didn't know anything about what I was reading. I was always wondering about the combinations of words and only after I left school did the ideas take definite form."

We talked over many selections, familiar to both; and I left him, wondering at the solid structure the old fellows had so carelessly built; and wondering, if the effort we are spending on the reading lesson,—on every lesson,—would be rewarded in proportion. I firmly believe it will.

When we come to consider that the reading lesson is the first to be impressed, and that first impressions last a lifetime, and that it is the most laboriously wrought and most frequently repeated by the pupil, does it not seem worthy of our most careful study, from the selection of a text-book to the preparation of the lesson?

When the Shah-Jehan wished to build a shrine to "The Light of the World," he sought the best Spanish architect of the seventeenth century.

The builder came, displayed his design, built the foundation and then purposely disappeared. For seven long years, the prince waited, and then the builder returned and finished his work.

To-day, on the marshy banks of the Jumna, stands a glimpse of heaven without a flaw, because the foundation had time to settle in the soft soil before the weight of the Taj-Mahal was superimposed.

Do we burden the plastic mind with our finely wrought casuistry? Let us select our readers for the lessons that will give a firm foundation, and then wait till the child mind can sustain the larger analysis,—the intricate arabesques of the design we have set so high as an ideal.

The School Room.

MAR. 24.—LANGUAGE, THINGS, AND ETHICS.
MAR. 31.—NUMBER, SELF, AND EARTH.
APRIL 7.—PRIMARY.
APRIL 14.—PEOPLE AND DOING.

The Growth of English.

By WILL SCOTT.

For the last half century our language has been growing at the rate of eleven words a day. The number of words now used is about 300,000. Johnson's Dictionary contained 45,000; Worcester's, 105,000; Webster's International, 125,000; the Century, 225,000, and the Standard, 300,000, nearly. Some of the new words in the Standard are as follows:

Abusee—one who is abused.
Academize—to cause, to conform to the rules of an academy.
Acculturation—the imparting of culture by one people to another.
Accusably—in a manner so as to be liable to accusation.
Achronism—the absence of time.
Aconate—a salt of aconic acid.
Criminology—the scientific study of crime and criminals.
Delsartian—of, or belonging to Delsarte.
Demote—opposite promote (barbarous.)
Linotype—a line of type cast in one piece.

Enlivening a Reading Class.

By I. L. R.

BREAKING THE NEWS.

1. The sunshine on the kitchen floor
2. Was darkened. Through the open door
3. Came Lucy, quick as feet could run,
4. Her long hair flying in the sun,
5. Her blue eyes sparkling, and the blood
6. Bright in her cheek. She came and stood,
7. Her hand on mother's ironing-board.
8. And for a moment said no word.
9. "What is it, Lucy?" "Mother, O,—
10. It's such a splendid day and so
11. I felt like running and I came
12. To tell you—mother it's a shame
13. To have you working here like this,
14. So let me fix you (with a kiss)
15. And put your pretty collar on.
16. Who knows but maybe Uncle John
17. Or some one else from town might call?
18. I want you to look nice—that's all.
19. Oh, never mind the ironing. There,
20. Sit down and let me fix your hair.
21. Just think! It is a whole long year,
22. Since first you wore your mourning, dear,
23. In memory of our poor lost Jack.
24. And now you ought to put off black
25. And be more cheerful.—For suppose
26. That Jack had not been lost, and those
27. Two sailor boys who brought the word
28. Had been mistaken!" "Child, you've heard—
29. What have you heard? Don't tremble so.
30. Look at me, Lucy." "Ah, no, no,
31. For I must hurry all I can.
32. This afternoon, as fast I ran,
33. Coming from school (now let me place
34. This purple bow upon the lace
35. To make a little brightness.) Well,
36. Ah, mother, there's not much to tell.
37. If you must know, that was a tear.
38. I could not help it.
39. Have no fear.
40. The dead are safe in heaven, yes,
41. But not the living. Can't you guess
42. Who met and kissed me as I ran,
43. Grown such a tall and handsome man?
44. He feared the shock might be too great,
45. So he is waiting at the gate,
46. But not a moment did I lose.
47. I came right in to break the news.
48. And that is why I fixed you, dear,
49. To look so pretty. Jack, come here."

—Selected.

Miss R's reading class had become thoroughly tired of their readers, and had little interest in the reading lesson. The following plan was successfully tried for arousing their interest:

The above selection was copied, a few lines at a time, from dictation, or from the board, then neatly copied on paper, as a whole, and read by each pupil in turn, after careful study. Each then wrote as many questions as he could, and gave a reason for each answer, for example: What kind of a day was it? A pleasant day, because the sun was shining. (Line 1.) What was the time of year? Summer, because the door was open. (Line 2.)

Below are a few more of the questions:

What was the day of the week? (Line 7.) What was the color of Lucy's hair?

About how old was Lucy? Why do you think that she was not very small? Why do you think that she was not a young lady?

Was she a healthy girl? Was she a handsome girl? Was she kind to her mother?

Did her manner indicate excitement? Did her mother suspect what she had to tell? How many contracted words are there? How many imperfect rhymes are there? etc., etc.

After this, each wrote the story in prose, weaving in the answers to many of the questions, and all the stories were criticised by the class.

Each day found the class more deeply interested, and more than a week was spent on this piece, then others were studied in the same way.

Language in the Primary Grades.

By DORA COX FRYE.

The questions, "Why do so many Intermediate and Grammar Grade teachers fail in their language work?" and "Why is language so often disliked by pupils in these grades?" are often asked. Both may be answered, often, by stating the fact that the work of developing the mental faculties of the pupil when he is in the primary grades is too often neglected. That language is a science, and is founded upon certain principles, all must admit. If these fundamental principles be developed in a systematic way, proceeding, step by step, from the known to the unknown, the child will experience no difficulty in grasping them. The foundation is thus laid for a pleasant work in the future. The child's ability to *think* is strengthened, his reasoning powers quickened, and the great end and aim of the true teacher, viz., to develop the faculties of the child, is accomplished.

The outline given below was prepared and used successfully by an experienced teacher, the answers being quoted verbatim from her class. The lesson was begun by telling the children the following story:

Once a pretty, little red-bird laid four eggs in a nest. A sly old cat came creeping through the grass and tried to catch her; but the little bird flew away singing her sweet song. The cat went away and the bird came back and sat on her eggs. But the cat is sly and she may catch the pretty bird yet.

The children were asked to close their eyes and try to *see* what had been told them. Then they were asked to *name* the things which they saw. (Bird, nest, eggs, cat, and grass.)

Did you see the *real* bird, nest, eggs, cat, and grass? (We saw them in our minds.)

The pictures which you had in your mind of the bird, nest, eggs, cat, and grass, are called mental pictures or ideas. Now how did you cause *me* to know you had those pictures in your mind? (We named them to you.)

What did you use to name those mental pictures? (We used the words "bird," "nest," "eggs," and "cat.")

What, then, is the use of words? (Words are used to name mental pictures, or ideas.)

Make the three sounds, separately, of the word *cat*. ("c" "a" "t")

Put these sounds together and what have we? (The word *cat*.)

Then of what are words made? (Words are made of sounds.)

Sometimes we wish you to *think* of these sounds without hearing them spoken. How can we cause you to do this? (By writing the letters instead of making the sounds.)

What, then, is a letter? (A letter is written to make us think of sounds.)

Now you may think of something the cat can do. (Jump, run, purr, drink milk, catch mice, catch birds.) Put the ideas *cat* and *catch birds* together in your mind. That is called thinking. Can you put the ideas of *cat* and *writes* together? (No.) Why not? Because the cat can not write. What kind of ideas then must we have, in order to think? (Ideas that will go together.)

Yes, ideas which are related. Now form a mental picture of something else and name it. (Dog, boy, girl, book, clock, doll.)

Think of something the dog can do, then name to me what you thought. (The dog barks.)

Using words to name your ideas is also called *expressing* them. Put together in your mind the ideas *bird* and *sing* and name or *express* your thought. (The bird sings.)

You may write it. Now tell me what thoughts are made of. (Thoughts are made of ideas.)

What do we use to express our thoughts? (We use words.)

The words which you use to express your thoughts, when you speak them, or when you write them, form sentences.

Thus we develop the idea, word, letter, thought, and sentence; and while the definitions given in the answers by the pupils differ somewhat from the book definitions, I think they are quite as good and *some of them better*.

Many examples should be given for each of the above points until pupils are thoroughly familiar with the terms used and with each process of the thought. This will afford ample material for a number of lessons and the ingenious teacher will find many ways to enlarge upon the above suggestions, and will not feel that she has labored in vain.

Busy Work for the Older Children.

By ELLA M. POWERS.

The following may be given with profit to the larger boys and girls:

Upon the blackboard write a sentence consisting of three or four clauses. Take as an example the following sentence, and number each separate part of the sentence:

"Sweet was the sound, where oft at evening's close,

Up yonder hill, the village murmur rose."

Tell the children to see how many different ways this sentence may be expressed. As a help to the first sentence write out several combinations for them. They will afterward make their own combinations.

1 2 3 4	2 1 3 4	3 1 2 4	4 1 2 3
1 2 4 3	2 1 4 3	3 1 4 2	4 2 1 3
1 3 2 4	2 3 4 1	3 2 1 4	4 3 1 2
1 3 4 2	2 3 1 4	3 2 4 1	4 3 2 1
1 4 2 3	2 4 1 3	3 4 1 2	4 1 3 2
1 4 3 2	2 4 3 1	3 4 2 1	4 2 3 1

Let the children write the sentences making these combinations and constructing declarative sentences. Then let them construct interrogative sentences and exclamatory sentences. Children delight in variety, and seventy-two sentences will keep them busy, but the wise teacher will not tell them at the beginning of this work that seventy-two sentences must be made from these words. She simply says, "Let us see who can write the greatest number."

Again, write upon the blackboard the syllable "spec," and require them to write a list of words that begin with "spec."

Another day ask them to find out how many adjectives will describe "man." In order to assist them a little write upon the board

Man	Personal appearance	size	large, small, fat, lean.
		age	old, young.
		manner	graceful, awkward.
		eyes	gray, blue.
	Moral qualities.	head	large, small.
		hand	strong, weak.
	Mental qualities.	{ honest, dishonest, religious, irreligious, good, bad.	
		{ intelligent, ignorant, educated, uneducated.	

The few sample adjectives placed in the analysis serve as a hint, and the pupils readily see what is required. This is fun for the children, and at the same time they are acquiring a wide vocabulary.

Another day write upon the board the word "port" and ask for a list of words that shall end in port. Soon there will be lists containing export, import, transport, report, support, and many others.

One of the best devices that has been tested is the game of "linking words." This the boys and girls delight in doing. We change one word to another by changing one letter at a time; as, change dog to cat. The links are dog, dot, cot, cat.

Change bear to salt; beat, meat, melt, malt, salt.

The pupil who can change one word to another by the least number of links achieves a victory. The following are some of the "victories" gained by several boys and girls: Book to coat. book, boot, boat, coat.

Girl to bell; gill, bill, bell.

Hope to rich; rope, ripe, rice, rich.

Word to cast; wore, ware, care, cart, cast.

Find to best; bind, bend, bent, best.

Home to host; hope, host.

This to wren; thin, then, when, wren.

Game to caps; came, cape, caps.

Time to late; dime, dame, date, late.

Long to sits; song, sons, sins, sits.

Leaf to dial; deaf, deal, dial.

Moon to sofa; soon, soot, soft, sofa.

Line to daze; dine, Dane, daze.

Mary to lack; mark, lark, lack.

Bird to case; bard, card, care, case.

Gold to toil; fold, told, toll, toil.

Sun to far; fun, fan, far.

Snow to knit; know, knot, knit.

If a class have been studying and have become familiar with the American poets, let them make acrostics from their poems, as Longfellow:

Ladder of St. Augustine.

Outre Mer,

Night, Voices of the

Golden Legend.

Footsteps of Angels,

Evangeline.

Luck of Edenhall.

Lamentation of Hiawatha,

Old Clock on the Stairs,

Wayside Inn, Tales of a

The entire name is often taken. An acrostic of Irving's works might be:

Ichabod Crane.

Rambles Abroad,

Voyages of Christopher Columbus.

Irving's Sketch Book.

Newstead Abbey.

Life of Goldsmith,

Whittier, as,

War Times,

Home Ballads,

Invocation,

Tent on the Beach,

The Stranger in Lowell

Italy,

Expediency and Justice,

Revelation.

In one school the teacher has a desk drawer full of mineral specimens. One day she placed them on the table and asked the unemployed children to write sentences including the specimens, as, Coal is found in Pennsylvania, Silver comes from Colorado, I have a gold ring.

Again, a teacher wrote upon the board: "I will set my table for dinner. There will be ten people."

The children constructed sentences telling how that table is set; how many plates, how many knives, forks, spoons, cups, saucers, glasses, and silverware. At the close they count the number of pieces on the table; then the number of china pieces, of silver pieces, and of glass. All this keeps them busy.

Carbon.—Its Qualities.

(From a lecture by Dr. R. G. Eccles.)

It exists in nature both free and combined. As free carbon it bears the well-known forms of charcoal, the diamond, and graphite, or the so-called lead of lead pencils. In a combined state the names of its compounds are legion, and exceed by far all those known of every other element. So vast, indeed, is the number, that they have been constituted a separate branch of chemistry, and to-day it is the most important branch. All the great problems of the science have for half a century been finding their solution here.

Priestly, Black, Lavoisier, and Cavendish directed attention toward the substances from which organic bodies are constructed. Dr. Joseph Black gave us the first conception of the nature of the raw material of the world of living things, and thereby laid the corner stone of the temple of scientific chemistry. The so-called air which Black found fixed in lime and chalk, and that we regard as an impurity of the atmosphere because it is a waste product of our bodies, was soon discovered to be the food of plants.

We foul the air, making it unfit for further breathing, and destructive to ourselves. An animal kept in a close, confined space will soon die because of the amount of this gas it will produce. A light kept in a similar space will soon be extinguished for the same reason. Where a light will not burn, life cannot exist. Plants in the sunlight re-convert all this poison into pure air again, thus saving animals from that death they would surely, if left alone, bring upon themselves. Plants appropriate the carbon of this poisonous gas to build themselves up. It is therefore their food, and they transform it into our food.

Like the beat of a vast pendulum, carbon swings to and fro from plants to animals, going to the former as carbon dioxide, and to the latter as various kinds of food. The foul air of close rooms, the choke damp of mines, the gas of soda water, and the carbon dioxide of the chemist are one and the same thing. It once was called "fixed air" and is sometimes called carbonic acid gas. It has swung as here described for eons of ages, and so made possible the life both of plants and animals. Within the trunks and leaves of trees, the stems of herbs, and the bodies of animals, it likewise keeps up an incessant dance, changing from form to form, thus justifying the statement of Dr. Hoffman, the Berlin chemist, who said that organic chemistry is "a history of the migrations of carbon."

Take some bicarbonate of sodium after placing it in a candy

jar or other deep vessel, and pour thereon some dilute sulphuric acid. This will give a supply of carbon dioxide for experimenting. While perfectly invisible and apparently non-existent, it can be dipped out with a cup or beaker and poured from vessel to vessel, as we can pour water. A cupful of it poured on a lighted candle or taper will extinguish it. If the lighted candle or taper is dipped into the vessel containing it, extinction occurs immediately. Place a living animal there and life will be extinguished with equal celerity. Pour a cupful of the gas into a vessel containing some clear lime water; on shaking the lime water it will at once become milky from a formation of white chalk. Pour another cupful or two into a vessel having some water slightly colored with a solution of phenolphthalein and a trace of ammonia; on shaking it, the bright red color will disappear and leave a colorless solution.

What have been the probable migrations of these samples of gas with which you have been experimenting? You have torn it from baking soda that a manufacturing chemist not long ago constructed under the delusion that some day it would be used to leaven bread, or sweeten the acid stomach of a dyspeptic; he forced it from its abode in some marble dust, chalk, or limestone where it had, doubtlessly, slept for millions of years, unconscious of the mighty changes going on around it. We can easily conceive of it as at first buried in a deep ocean far below the tempest that raged upon its surface. Ages after it must have appeared as part of the newly created dry land. Later it may have risen into prominence as a beetling cliff of a weather scarred mountain. Not long ago a quarryman wrested it from its sepulcher, bore it to a stone-cutter, who cast it aside as waste chips from a block he was polishing, and finally these were turned over to the maker of baking soda who released it from its stony cements and left it in this new tomb. We have freed it from this, and rolling away every incumbrance have allowed its invisible spirit to enter the true land of ghosts. But is this a complete resurrection? Who can summon from these misty shades its tangible form? With a burning strip of magnesium let us try. You can hear the crackling sound of contending forces; death does not willingly part with even carbon when once in his grasp. Behold how we have restored it to the light and glory of living being after millenniums of repose, and once again it is as black as its fellow carbon particles that masquerade as charcoal, soot, or lampblack.

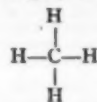
As we have handled it, it is unseen and perfectly colorless, as well as transparent. Two atoms of a permanent gas called oxygen, have enveloped every atom of carbon. Invested with these as a covering, blackness, and resistance seem to have permanently disappeared.

Oxygen can be truthfully described as the prince of the power of the air. Under favorable conditions it transmutes everything it touches. It is likewise the true god of fire. About one-fifth of the air is composed of it, and it resides there, ever ready to promote combustion and to maintain life. It is easily produced in a comparatively pure state by heating a mixture of chlorate of potassium and black oxide of manganese, in a retort or test-tube. It can be conveyed by a rubber or glass tube to a bottle or flask full of water, inverted in water. The gas will displace the water in the inverted bottle. Or it can be run into a rubber gas bag having a stop cock from which it can be drawn as required. Take a bottle full of this gas, dip a glowing spark upon a piece of wood into it and see how the wood bursts into flame. Note the fact that even a steel watch-spring, tipped with melted sulphur and lighted, will send forth in it, a magnificent pyrotechnic display of scintillating stars of fire. Sulphur, the fabled fuel of hades, burns in it with a flame of loveliest blue. Is blue really true in this case?

United with another gas called hydrogen, it forms water so that seven-eighths of the weight of every ocean, lake, and river, is composed of it. As carbon dioxide is the product of its union in combustion with carbon, so water is the product of its union in combustion with hydrogen. The metal potassium can steal it from water in any form, so that if a small piece of this metal is placed on the wick of a lamp and then touched with a piece of ice, the lamp will immediately be lighted. If phosphorus is melted in hot water and oxygen supplied through a glass tube, the phosphorus will burn in the very midst of the water with dazzling brilliancy. Water cannot quench such a fire. These experiments give some idea of the properties of the substance that has the strong power of rendering carbon invisible. Inorganic chemistry can give us facts, but we must go to organic chemistry to discover the principles that interpret these facts. Sometimes bubbles of gas rise from the bottom of the pond? From the midst of the decaying vegetation that lies below, they come dancing to the surface like angry spirits. Collect a quantity of these bubbles, strike a match and see them flash into flame. In them we have the promise and potency of the whole vast world of organic things? As an acorn develops an oak, so these gaseous molecules by successive additions build up the myriads of complex molecules that make life in every form possible as we know it. In this gas we have carbon of the same kind as that of charcoal, divided up into its smallest possible pieces, and held in the divided state by four atoms of hydrogen.

Everybody knows carbon as a solid. If it behaved in accordance with weight as most elements do, it would be a permanent gas. As we know it, nothing could be farther from a gas. Indeed it is the most intractable solid known. High temperatures render all other solids first liquid and then gaseous. Not so carbon, within the range of human experience. It cannot be liquified, but becomes denser and denser with heat. Because of this quality it is extensively used in making crucibles in which to melt the most refractory metals.

In consonance with the fact that this gas is composed of carbon and hydrogen in the proportions of 1 part by weight of hydrogen to 3 of carbon, or what amounts to the same thing, 4 parts of the former to 12 of the latter, its formula is always written CH_4 . We picture it graphically thus:



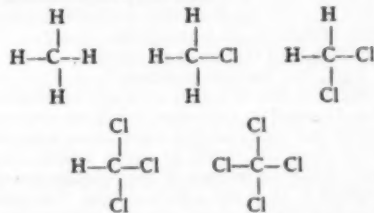
Chemists do not teach that this is a true picture of a molecule of marsh gas. On the contrary they have good reasons for believing that it is not. Neither is it wholly fanciful since it represents the possible methods of re-action which it possesses. Every picture of this kind embodies in itself a vast amount of useful information that can only be clearly imparted in this way. Every letter and line as well as their places in relation to each other, embody well established facts in a symbolic manner. They are defective in that they can only lie in two directions, while atoms within a molecule give evidence that some of them occupy space out of the plane of our picture. In other words they are tridimensional, having depth as well as surface.

They are also seriously defective in that they are necessarily static or stationary as drawings, while the real atoms themselves are in an incessant whirl. Could we study them as moving objects, instead of drawing them in fixed forms, we would be nearer the right. The form of their activity is unknown, but the favorite comparison is that of the solar system. Every atom can be imagined as playing the role of a planet in a molecular solar system. In marsh gas or methane, carbon takes the place of the sun, and the four hydrogens are like four planets, circling around it. By using proper methods of substitution, each one of the hydrogen atoms can have its place filled by other atoms or molecules of equal valence. In this way new and larger systems are built up.

Carbon has four times the attractive power of hydrogen, and is therefore written with four bonds of attraction, while hydrogen receives but one. Carbon can be compared to a four-handed man, and hydrogen to a one-handed. When they take hands as in marsh gas, every hand is clasping another hand. Their process of union is an interesting study that shows how chemical changes are usually exchanges.

When molecules are ruptured, the break up is due to the displacement of a part of one molecule by a part of a second having at least an equal store of attractive energy for the position. In every reaction that occurs, an equal and opposite action precedes it. Graphic formulas represent how and where the rupture occurs, the quantity of the broken molecules that take part in the same, and the measure of attractive force.

Experience has shown chlorine to be the equivalent of hydrogen in replaceable power, and so we find it capable of taking the place of every hydrogen in methane or marsh gas. These changes are seen in the following:



A number of metals, other haloids like bromine or iodine, compound radicles and the like are equally able to be substituted. Very large and complex molecules may in this way be built up. It is seldom possible to do so in a direct, straightforward manner; in an indirect way it is comparatively easy.

When all is done and said,
In the end this shall you find,
He most of all doth bathe in bliss
That hath a quiet mind.

—Vaux.

Life should be full of earnest work,
Our heart undashed by fortune's frown;
Let perseverance conquer fate
And merit seize the victor's crown.

The Way of the World.

(A Lesson in Ethics.)

By E. E. K.

Laugh and the world laughs with you;
Weep, and you weep alone;
For this brave old earth
Must borrow its mirth,
It has troubles enough of its own.

Sing, and the hills will answer;
Sigh, and 'tis lost on the air;
The echoes rebound
To a joyful sound,
But shrink from voicing care.

Rejoice and men will seek you;
Grieve, they will turn and go;
They want full measure
Of all your pleasure,
But they do not want your woe.

Be glad, and your friends are many;
Be sad, and you lose them all;
There are none to decline
Your nectared wine,
But alone you must drink life's gall.

Feast, and your halls are crowded;
Fast, and the world goes by;
Succeed and give,
And it helps you live,
But it cannot help you die.

There is room in the halls of pleasure
For a long and lordly train;
But one by one
We must all file on
Through the narrow aisles of pain.

—Ella Wheeler Wilcox.

At first thought a view like the above seems to show the world in a heartless light, but a little examination changes the apparent value of the world's ways, somewhat. Grammar pupils may be led to make this examination and to learn a lesson in ethics thereby.

"Laugh and the world laughs with you." Is not this a proof of sympathy? If your neighbor sincerely rejoices in your happiness, is he not a friend?

"Weep, and you weep alone." This is partly true, but when, and why? In bereavement do your friends leave you in solitude or do they gather about you and support you with their sympathy? If bereavement wins sympathy, as we know it does, what are the griefs that do not?

"Loss of money" some one will suggest, but do a *l* friends immediately leave us when such a misfortune overtakes us? Or do the best of them remain true and helpful until we, perhaps, wear them out with our tedious repining or prove ourselves unresponsive when they would help us to *help ourselves*?

Some people have mysterious troubles that they never tell, but grow sad upon in chosen loneliness. Often and often such persons are watched by anxious friends, who long to help them but cannot get near enough even to speak a word of encouragement. Is it not to be expected that such friends will in time give up their longing and retire from a presence which infects even the cheerful with its heavy melancholy, while offering no opportunity for doing good? Should the sufferer in such a case, even though his trouble be real, complain of the world? Should he not rather be very grateful for the wish on the part of friends to do him good, even though he cannot avail himself of it?

Then, too, are there not a great many fancied troubles over which people whine and whine till they wear out the sincerest affection? Is it not best for the world to turn its back upon such afflictions, since attention always magnifies them?

"Sing, and the hills will answer;
Sigh, and 'tis lost on the air."

Is it not a beautiful law of nature by which harmonious sounds are repeated and carried to a distance, while the non-musical are non-reverberative and lack carrying power, as a usual thing? It is instinctive to want the world to suffer with us, but what a dreadful thing it would be to have all the sighs go round and find echoes everywhere! Is it not a duty to keep our griefs hidden as much as possible and to share our *joys* instead, thus adding by our presence to the world's sunshine instead of to its sorrow?

"There is room in the halls of pleasure for a long and lordly train; but one by one we must all file on through the narrow aisles of pain." Suppose it were otherwise—suppose the world went seeking misery instead of brightness!

Yet sympathy is so sweet and gentle nursing soothes so kindly that we ought to be glad to give them both when fellow creatures need them; and we ought to be thankful that, even in this sunshine-loving world so many will step into the darkness of a friend's chamber of suffering, carrying a little bit of the sunshine with them and that, in this pain-fleeing world, the really unfortunate are so seldom utterly deserted.

The truth in this plaintive poem teaches a double moral:

1. Our pain, when exhibited, distresses our friends and adds to the world's unhappiness as well as to our own; therefore, we should hide it all we can.

2. Sufferers long for sympathy and are soothed by it; there-

fore we should extend this healing influence whenever we can thus lighten some burden of grief.

A discussion of the verses in class may be made to bring out the above thoughts, and perhaps others as valuable.

Supplementary.

March.

March, you're a jolly old fellow, I know;
They may call you a *blustering* old chap—but you blow
For us *boys* and our *kites*, and we don't care a fig
For the hats and the dust that go dancing a jig.

Puff out, you old fellow, blow hard or blow high,
At our *kites* you may bluster, and "*blow them skyhigh!*"
Nobody will find any fault but the *girls*—
And they make a fuss 'cause you "*blow out their curls!*"

You're just *our own* season—we've waited for you
And our kites are all ready, so strong and so new!
You jolly old fellow, if you were a boy,
You'd know why the March-month gives us such joy.

It is fun to stand high on the top of a hill,
And pay out your string—let it run with a will;
It is fun to "*hold hard*" while your kite pulls away,
And the wind blows a gale! ah, kite-flying is gay.

The ladies complain that you "*blow off their veils!*"
But never you mind, give no heed to their tales,
Devote yourself wholly to boys and their kites,
And trust to the *boys* to fight hard for your rights:

For, March, you're the jolliest old fellow we know,
And we like you the better the harder you blow!
When you marched in upon us we gave you a shout,
And we'll miss you at last when 'tis time to *mark out!*
—Wide Awake.

Talking in Their Sleep.

"You think I am dead,"
The apple tree said,
"Because I have never a leaf to show—
Because I stoop,
And my branches droop.
And the dull, gray mosses over me grow
But I'm alive in trunk and shoot
The buds of next May
I fold away—
But I pity the withered grass at my root."

"You think I am dead,"
The quick grass said,
"Because I have parted with stem and blade!
But under the ground
I am safe and sound
With the snow's thick blanket over me laid.
I'm all alive and ready to shoot,
Should the spring of the year
Come dancing here—
But I pity the flower without branch or root."

"You think I am dead,"
A soft voice said,
"Because not a branch or root I own!
I never have died,
But close I hide,
In a plummy seed that the wind has sown.
Patient I wait through the long winter hours;
You will see me again—
I shall laugh at you then,
Out of the eyes of a hundred flowers."
—Edith M. Thomas in *St. Nicholas*.

If we should live a thousand years!
Our time is all to day, to-day
The same, though changed; and while it flies,
The still, small voice, the moments say,
To-day, to-day, be wise, be wise!
—James Montgomery.

It is needless to say that THE SCHOOL JOURNAL is my constant helper. It is always full of valuable hints. With its help I hope to "Advance" this year.
R. L. M.

Editorial Notes.

The last chapter of Col. Parker's "Talks on Pedagogics" has been received, and the book, a magnificent volume of over 400 pages, is rapidly passing through the printer's hands.

A neat little paper *Pascua Florida* published by St. Joseph's academy, St. Augustine, is before us. It has compositions by the pupils, and has an attractive appearance. The teachers are earnest for progress; their library contains several valuable educational books; they also maintain a kindergarten. Success to them.

The conclusion of both parties is that the cause of the terrible financial difficulties we are laboring under is due to ignorance on economic subjects. This is very ably discussed by David A. Wells in *The Forum*. Undoubtedly we should leave the settlement of the finances and tariffs of the U. S. to a body of the best men, just as the legal matters are left to the supreme court. Railroad matters are left to a railroad commission; the Bering sea was put in the hands of able men and settled by them. Congress is made up of politicians and not statesmen. In other civilized nations it is rare a person is elected or appointed to an office where he has any power in the fiscal policy unless he has demonstrated his ability for his position, but here all sorts of men are set to tinkering our currency, hence the dreadful losses that have been sustained.

"Spelling: Special Directions and Suggestions" is the title of an eight-page pamphlet by Supt. Thomas M. Balliet, Springfield, Mass. Though intended primarily for the guidance of Springfield teachers, teachers in other cities will not be slow in availing themselves of Supt. Balliet's suggestions.

The correspondence on "The Study of Pedagogy," at Colgate university, which appeared in the last issue of *THE JOURNAL*, should have been credited to Mr. W. Carleton Tift.

A kindergarten association has been formed in Jacksonville, Florida, and Mrs. Olive E. Weston, of Chicago, is at its head. A training school opened Nov. 1, 1893, with a class of twelve. Two kindergartens have been opened and sixty children enrolled. This will be a center from which the truth will rapidly spread, for Florida is already aroused; a sentiment in behalf of the scientific treatment of children is taking possession of the people.

The government school, Graaf Reinet (the Gem of the Desert), Cape Colony, South Africa, has organized a teachers' training department. This is one of the most advanced steps taken in that country in recent years. Miss Murray is head mistress of the school. The training department is being established under Dr. Muir, the minister of education. The work will be carried on by a live woman, Miss Dorothy Rose Trewby, who has been a pupil of Miss E. P. Hughes at the Cambridge, England, training school. The school is to be congratulated in having secured her services.

An important educational conference will be held in Philadelphia during the month of July as a part of the University Extension summer meeting, under the auspices of the American society. The program that has so far been arranged, shows that the meeting will be of interest to teachers of all grades. A number of eminent specialists will be invited to conduct the round-table conferences upon subjects to which they have given special attention.

The leading feature of the meeting, however, will be a full discussion and presentation of the Herbartian school of educational thinkers, a school which has done more to stir and excite thought on educational matters than any other equal number of men at present at work in the field of education. It is well known that a great deal of intellectual effort along educational lines in Germany to-day is due to the work of the followers of Herbart, and in this country the most helpful educational work being done at present, is by the men representing the same educational tendency.

The systematic work in Herbart will be given under the direction of Dr. Frank McMurry, professor of pedagogy in the University of Illinois.

Leading Events of the Week.

On March 18 the ninetieth birthday of Hon. Neal Dow, the Maine Prohibition leader, was celebrated.—Thousands of London Trade Unionists parade and denounce the British house of lords.—The treaty with Russia passes the German reichstag by a big majority, in spite of opposition.—Death of Francis Edwin Brownell, the man who shot the slayer of Col. Elmer Ellsworth.—Pres. Dole, of Hawaii, hints that Great Britain may get Pearl Harbor.—The election day murder in Troy, N. Y., is being investigated.—The tariff issue will be the leading one in the next campaign in Canada.—An heir to the empire of China born.—Brazil's rebellion is said to be ended; Admiral da Gama took refuge on a French cruiser and Admiral Mello is in Montevideo, having deserted his followers.

Editorial Correspondence. IV.

THE ST. AUGUSTINE SCHOOLS.

I have been much interested in observing the growth of the public schools in St. Augustine; there has been a steady development year by year. Three years ago the board of education united all the schools or the city into one system, and appointed Walter J. Knibloe superintendent. The entire number of pupils enrolled is 700; the teachers number 21. There are eight grades below the high school.

In the high school is given a thorough and extended drill in grammatical and rhetorical study of the English language, together with a history of its growth and a general survey of the whole field of British and American literature. During the second and third years of the course several authors are critically read in class with attention given to formation of words, construction of sentences, figures of speech; biographical, historical, and classical allusions; characters, scenes, and events. These are some of the works specially studied:

The Deserted Village, Gray's Elegy, The Cotter's Saturday Night, Conduct of Life, The Fire Worshippers, The Lady of the Lake, The Lotus Eaters, Visions of Sir Launfal, Thanatopsis, The Pleasures of Hope, Il Penseroso, Bacon's Essays, The Professor at the Breakfast Table, The Closing Scene, Dream of Fair Women, Hamlet, King Richard III., Merchant of Venice, Othello, and Comedy of Errors.

In the study of the sciences the laboratory method is pursued.

A teachers' course.—This course is provided for those who wish to prepare to enter the profession of teaching. Among the studies are Psychology Applied to Teaching, School Management and Methods, History of Education, and School Law.

This high school holds its pupils remarkably; they seem to have the feeling of students in colleges—to stay until they graduate. Their attainments in English and science show good teaching. I was present at a meeting of a literary society formed of the pupils of the high school. The debate between a number of young men on the question, "Which is the most injurious, the slanderer or the flatterer?" was a very spirited one. This society has fitted up the school-room and put a handsome piano in it. Success to them.

I find the support of the board of education is what has enabled Supt. Knibloe to accomplish so much here.

Peter S. Arnan is a native of the city, and a very progressive man, and a firm believer in the new education. He was for eight years county supt. of schools, and his administration marks a use in the educational affairs of the county. His successor is Mr. R. F. Sabaté. Another active man is Mr. S. M. Pinkham, who has been a member of the school board for twelve years. His good judgment and financial ability have been of immense help. Judge Cooper is another who has helped greatly to shape educational affairs.

Mr. R. B. Rutherford, the assistant principal for the last three years, is a graduate of the normal school at Ada, Ohio. He is untiring in his efforts to advance his pupils. Supt. Knibloe was the educational commissioner to the Columbian exposition. St. Augustine high school was so well represented that it was the only one given a medal. The collection of coleoptera it has made alone deserved one.

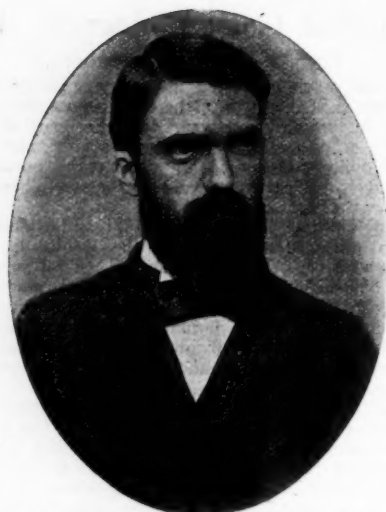
Supt. Knibloe is a native of Chicago. He was graduated from the University of Illinois in 1876. For five years he was the science teacher in the Champaign County Teachers' institute. In 1883 he took charge of the public school of St. Augustine which then consisted of four teachers and 75 pupils; interest was awakened and a new building was erected; a year later an addition of two rooms was made to raise the standard of teachers. A teachers' institute was organized, and Supt. Knibloe has directed its sessions for six years.

This brief account shows that earnest work in educational directions brings adequate results. Supt. Knibloe has found time to carry forward a course of pedagogical study under the direction of the school of pedagogy of the New York university, and to obtain its certificate. This fact alone shows why he has made such a success here. He is himself a student.

Just north of the city is the state institute for the deaf and dumb; there is a department for the blind also. The principal is Prof. H. M. Felkel, late president of the state normal school at De Funiak Springs. The half day spent in the inspection of the classes was a delightful one, for the earnestness of these pupils in search of knowledge was seconded by like earnestness on the part of the teachers.

A. M. K.

It has been announced that the San Francisco public schools will receive \$500,000 of Mr. Philip D. Armour, of Chicago, for the establishment of a manual training school for boys. Mr. Armour and Dr. Gunsaulus, president of Armour institute, have had conferences with the board of education over the matter. The only condition Mr. Armour makes is that the school shall be carried on under the school department, and shall be open to any one eligible to the public schools. Where are the people who predicted that manual training would be "forgotten in a year"?



Morrison H. Caldwell, A. M.

Many teachers become lawyers, but few lawyers become teachers. Mr. Morrison H. Caldwell, whose name is familiar to many readers of THE JOURNAL, was formerly not only a practicing lawyer but also an editor of law reports. He was born August 23, 1860, on a farm in North Carolina. After three years' study at Davidson college, he took a three years' course at the University of Virginia, where his reputation as a writer and debater won for him the editorship of the *Virginia University Magazine*. In October, 1884, he was licensed to practice law by the supreme court of N. C. Having located at Concord, N. C., he enjoyed a fair practice, until he was called to St. Paul, Minn., in February 1888, as one of the editors of the *National Reporter System*. His name appears as co-editor in two volumes of the *American Digest*.

In September 1890, he took charge of College Hill institute, College Hill, Miss. Having determined to master the science and art of education he devoted himself to the study of psychology and pedagogics. In Sept., 1891, he became principal of the high school at Moss Point, Miss., where his success is shown by the biennial report of Lieut. Gov. Evans, secretary of the school board, declaring that "as good work is being done as in any high school in our land."

In an article contributed by him to THE JOURNAL on "Meaning of Words," he called attention to the loss of energy resulting from the fact that all common school text-books are written in language beyond the comprehension of the pupils. In a later article on "Defects of Graded Systems," he forcibly demonstrated the injustice and absurdity of classifying pupils in all studies by their standing in arithmetic alone. In this issue will be found an article on "Teaching Literature," which makes a strong plea for common sense text-books in literature. Mr. Caldwell is a man of common sense and high scholarship which, coupled with his knowledge of psychology and of pedagogics render him well equipped for the teaching profession.

The board of studies for the Champlain Catholic summer school have now completed the program of lectures, addresses, and conferences for the next session, beginning on July 14 in Plattsburg. Bishop Spalding, of Peoria, will preach the opening sermon. Special attention is to be given to conferences for the teachers in Christian doctrine classes and for the reading circles.

The Fredonia New York state normal school has sustained a great loss in the death of Miss Elizabeth Richardson. She was about fifty years old and was well known in educational circles, having been prominently identified with institute work for many years. She had taught in this school since 1872. Her death was caused by a frightful accident last Saturday. Trying to step on the elevator while in motion her dress caught in the grating of the door and she was crushed to death between the elevator and the floor above.

William S. Rice, whose life for many years was prominently identified with the educational interests of Buffalo, N. Y., died a few days ago. Mr. Rice was born at Mayville, Chautauqua county, in 1820. He was educated principally at Alleghany college at Meadville, Pa., and fitted himself for the law. He came to Buffalo to live in 1847, and began to teach in the public schools with which he was connected nearly all of his life thereafter. In 1873 he was elected to the office of superintendent of education. He was re-elected in 1875, and since the expiration of his second term in 1878, had been retired from active life.

The late state superintendent, Victor M. Rice, of New York, was a brother; Miss Emily A. Rice, who is well known to the teachers of New York as an institute instructor in drawing, is a sister of the deceased.

Royal Palaces for Teachers.

(SPECIAL CORRESPONDENCE.)

It may be true that "there is no royal road to learning," but in Prussia there are at least royal palaces for learners. In a preceding letter a glimpse was given of a teacher's seminary or normal school, housed in one of Prussia's antiquated royal palaces in the village of Köpenick. To-day it was my privilege to visit a similar school in a similar building in the town of Oranienburg, an hour's ride north from Berlin. Some early Prussian king who had a wife named Henriette complimented her by building a palace for her here in the form of the letter *H*. This building, together with a part equal in size to a small farm, is now the property of a state normal school, "Beautiful for situation," on the swift-flowing Havel, but rather musty with age.

To know one Prussian normal school well, I am told, is to know all. This must be true so far as the essential features are concerned, for their organization is the same—same course of study, same number of teachers, same number of students approximately, teachers appointed by same man (the minister of education, the commission being signed also by the emperor), same salaries paid in like positions in all the 121 normal schools.

The salaries of all teachers in Prussia are affected somewhat by length of service. In the normal schools, the minimum or beginning salaries are as follows: Principal, \$1,000; head teacher, \$750; other five teachers, \$450 each; assistant teachers (if any are needed), \$375. All have besides lodgings free, but not board. The principal and head teacher must be university graduates.

All positions as teachers in normal schools, as in other schools, are *permanent*.

The expenses of a student in a normal school are very low. The tuition being free, the text-books few, small, and cheap, the chief item of expense is the board, and this is astonishingly small.

While I was conversing with the principal, a waiter entered bearing a tray on which was a dish of boiled potatoes and a plate of roast beef. The principal asked me to taste each. I did so, hardly knowing why, and the waiter retired with his dishes. The principal then told me that such a sample of the students' dinner, by a rule of the school, must be sent to him every day, as a proof that it is satisfactory. The daily bill of fare is for breakfast, meal soup; dinner, roast beef (or its equivalent) and potatoes; supper, potatoes, and hominy, or butter and cheese. Students furnish their own bread, so that the necessary daily expense for food is somewhat over twelve cents. Students also furnish their own bedding. Those unable to meet even this very small expense of a normal school course may receive aid from the state, sufficient to cover or nearly so, the entire cost.

Students entering these schools sign a pledge to place themselves at the disposal of the state, that is to teach wherever they are sent, for five years after graduation, or pay for their tuition while in school. The state is not obliged to furnish positions for all, but as a matter of fact does so. The state regulates the admissions into the normal schools, so that the supply of teachers shall be kept about equal to the demand. Each normal school is authorized each year to admit so many students, and no more.

At Oranienburg, last fall, only one-fourth of the applicants were admitted. Every applicant must submit not only to an educational test, but to a physical examination as well. Only those whom the examining physician certifies as physically sound can be admitted. For example, no one with a tendency to consumption is received. From those who are qualified to enter, the school selects its full number, say 30 or 35, and the rest must seek admission at some other normal school.

There is no competition among the schools for students. The reputation of a school rests wholly upon the quality of the work done; and even in this respect there is little latitude for innovations, owing to the complete uniformity in the organization and requirements of the different schools.

The formation of the practice school connected with these institutions is a feature (as in American normal schools) in which uniformity is out of the question. Here in Berlin, for example, the two normal schools select their model school pupils from a great number of applicants.

In some small towns where normal schools are located, the normal school receives all the public school pupils and the public school money. In still other places, as at Oranienburg, the model or practice school has to compete with excellent public schools in the town. In such cases the attendance is subject to annoying fluctuations.

Everywhere, however, the necessity of a practice school is fully recognized.

The internal arrangements of the Oranienburg school differ only in details from the school at Köpenick. In the first named there are four or five bedrooms for students (in the latter but two), no room accommodating more than thirty.

I observed the work of practice teachers in five or six classes and found it fairly good. In the normal department, the teaching I saw was very fine.

THEO. B. NOSS.

Correspondence.

A Grievous Error.

A recent writer in THE SCHOOL JOURNAL speaking of spelling says, "It appears that some children less readily receive word-forms than others."

Can they become as good spellers as the others? *Of course they must.* (Italics mine.) There is so much of this kind of thinking that it is worthy of notice. Every one interested in child-culture wants such questions answered correctly. It seems to me that there should be some better reason given than "of course." Suppose the question were, "Must every child run equally fast? or eat the same amount and kind of food? or wear the same sized hat, or put his feet into the same number of shoe?" The answer, "of course," would be about as scientific in the latter as in the former question.

No teamster expects just any two horses to become equally good pullers, or equally rapid trotters. Why not? Because he knows too much about horses to make any such error in his calculations. Yet children differ as much in their powers and capabilities as horses.

But what has led to so grievous an error in our conclusions about human beings? Evidently a false estimate of human nature. Our science of human beings is not so good as is our science of horses. The whole difficulty arises from a psychology which does not take into consideration the body, and which teaches for truth the dogma daily proved false "that the mind acts as a unit." This old dictum of the former philosophers has done more to retard progress along psychological lines than anything else.

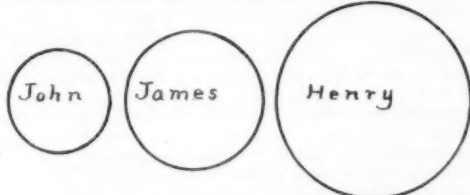


Fig. 1.

It puts the student of human nature in a pen, and side lines him besides. Just as he starts out to make some conclusions from observations he has made, he is met with the statement "the mind acts as a unit," which completely contradicts his conclusions, and he is forced to turn back.

There can be but one conception of a difference in minds of pupils by a teacher who is laboring under the delusion that "the mind is a unit, and acts as a unit, and that is a difference in *sine* or general power. By diagram that difference would be represented as in fig. 1. Or by comparison as in fig. 2.

As a matter of fact, however, John, James, and Henry will stand related to each other as in fig. 3.

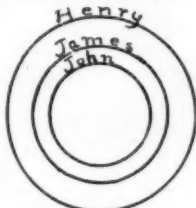


Fig. 2.

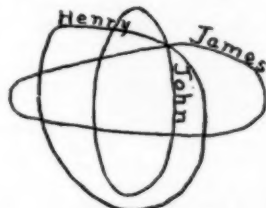


Fig. 3.

John reaches out in one direction, James in another, and Henry in still another. John can become a good speller, James a good penman, and Henry a good arithmetician, just as one horse becomes a good walker, one a good trotter, and another a good amble. Occasionally you will find a horse that can "go all the gaits." So, once in a lifetime maybe, a teacher will find a pupil who can become equally good in all things, but not often enough to justify the conclusion "of course," all should be made equally proficient in any one thing. To expect them to become so, is to look for impossibilities. And what is worse it makes the teacher a child-driver. He may use various methods in this driving, but drive he must.

G. T. HOWERTON.

Injudicious Punishments.

A good teacher should be sympathetic and use common sense in such punishments as she has to inflict.

Think of this! A teacher near Philadelphia, sent a little boy home on a cold day without his hat and overcoat. Why? Because, she said, he stole another little boy's slate pencil, and she wished to teach him a lesson—therefore, she took away his books and slate and hat and coat, saying: "I guess you stole these, too. Now go home. We don't want thieves here."

Another teacher in one of the Middle states taunted a little boy with being a "thief," and his little sister died of the shame, when her schoolmates pointed her out as the "thief's" sister; and the mother of the two (a weak, nervous woman) is now in an insane asylum crazed by the death of her little daughter.

What do you think such teachers (?) deserve? Thank God, they are few! I have studied "the teacher" in many places, and I find her usually up to the highest standard of cultivated womanhood. L. A. H.

I beg leave to ask you, if the inelegant expression, "I did not get to go," is good English or grammatically correct? If you will give me your opinion you will confer me a favor. M. E. K.

Marysville, Ohio.

Get means "to obtain." I did not obtain to go would not mean anything. Get is commonly used for arrive, as "He got there before ten o'clock." I did not arrive to go would be nonsense. Webster gives other meanings and shades of meaning for get, but no such use as in this sentence, which is really a contraction of the thought I did not get to the point of going. Whenever we get, we must get something or somewhere.

A Plan for Teachers' Classes.

In studying over the University Extension plans, as now carried out by the leading educational institutions of this country and England, the longings of my own heart have led me to formulate a plan that if carried out would be of incalculable benefit to me, and if to me why not to other laborers in the educational field.

I can do little more than sketch the leading features that have presented themselves to my mind, leaving the details to the attention and study of the leaders of educational thought. Let us call this idea, when properly formulated and completely evolved, the University Extension course in pedagogics.

PROVISIONS.

1. Let it provide for such a course of instruction in counties where a membership sufficiently large to pay expenses can be secured.
2. Let this class be an adjunct to the county institute.
3. The course of study should be prepared by our leading educational thinkers.
4. Classes to be formed and conducted by the state normal schools, the state universities, and other accredited colleges. Lecturers from the institutions forming such classes should appear before them at stated periods for the following purposes: (a) To lay out required reading; (b) to indicate lines of special study and research; (c) to deliver lectures along the line of work pursued; (d) to hold round table talks and quizzes; (e) to conduct such examinations and such written or other reviews as are necessary.
5. The plan should provide for proper certificates and diplomas and methods of awarding the same.
6. The meetings should be held at the county seat or other centrally located town and should be on Saturdays.
7. All teachers and those who contemplate entering the profession, or are interested in educational work should be eligible for the classes.
8. As an incentive to join the classes and as a stimulus to thorough and continued effort, it might be provided that teachers with five years' experience, who finish the work satisfactorily, who pass all examinations, and who have been awarded a diploma shall be granted a ten years' certificate to teach in the state.
9. If absolutely necessary let the county commissioners be empowered to appropriate funds for the aid of such classes.

1. The course of study should provide for work along at least five lines.

- | | |
|----------------|--|
| (a) Philosophy | Mental,
Moral, |
| (b) Pedagogics | Theoretical,
Art, |
| (c) History | General,
Educational. |
| (d) | English Language, and Literature, including masterpieces of English and American literature. |

(E) Academic, including thorough knowledge of branches to be taught.

2. Not less than two years of closely connected work should constitute a course. Perhaps three would be better.
3. Such fees should be required as are necessary to maintain the work.
4. A state commission should have the whole matter under charge. Such commission to be provided for by statutory enactment.
5. It is to be hoped that the practicability of such a plan would be so apparent as to make it desirable and altogether advisable to enact such legislation as would provide for its successful prosecution.

THOUGHT.

1. Ten years' experience in institute work in Kansas has led me to the conclusion that, as our institutes are now organized, far too much time must be devoted to purely academic work. Perhaps it ought not to be so, but when we consider the immense quantity of new blood that is being infused into the profession each year we see that much preparatory work is absolutely required.

2. One month is a very short time in which to prepare a new candidate for the awful responsibilities that are to devolve upon him as a teacher.

3. The eternal interests at stake require that our teachers should be thoroughly prepared. Since the exigencies of the time and circumstances are such that our teachers cannot all be normal graduates, why not the next best thing?

4. Might not the inspiration engendered and the enthusiasm aroused be potent factors in the uplifting of the whole educational, political, and social fabric?

5. I do not put this forth as a finished and logical scheme, by any means. If I have but sown the seed that may in another soil spring up and bear fruit I shall feel amply repaid.

Chanute, Kan.

W. BLACK.

An Easy Way to Teach Comparison of Adjectives.

I find that in all my school work, nothing is such a "bugbear" to children as grammar. They dislike it exceedingly, and it draws continually upon my stock of ingenuity to keep them interested. I tell them stories and make illustrations on the blackboard which will illustrate some point in the lesson.

A few days ago my language class, which is six in number, and ranges from eight to twelve years, were studying comparison of adjectives. For the first lesson, I gave them the rule for the regular comparison of adjectives, with five or six words of different degrees to underline.

As I have a great many classes, I did not have the time that day to explain the next day's lesson, as should be done. The result was, that on the following day only one of the three present could give the rule.

I then went to the board, drew an outline of a hill, divided it into sections and represented a boy as just starting up the hill with his sled. I let them choose a name for the sled, which was in one case small. I wrote small on the sled, drew one line under it, and on the same level wrote positive. I repeated the same picture twice with a change of names and number of underlines to suit the different positions.

At the change of names, I had them refer to the rule and give me the different endings. The same course is pursued with adjectives which form their degrees irregularly quite as easily.

I found at the end of this lesson, they could very nearly say the rule, and at their next lesson were able to repeat it word for word, to give the story and underline the ten or twelve words of the lesson with scarcely a mistake.

M. L. W.

A New Cooking School

has been started, which recognizing the importance of having plenty of milk on hand for cooking purposes, has found its requirements fully met by Borden's Peerless Brand Evaporated Cream, prepared by New York Condensed Milk Co. It highly endorses it.

(Selected from OUR TIMES, monthly, 30c. a year.)

Geographical Notes.

The Banana as a Lawn Plant.—There are few people except those who have traveled in Central America, or other tropical countries, that have ever seen a banana plant growing, yet we venture to say that in a few years this plant will be a familiar object on lawns. Specimens have been grown in the Northern states with success, but they will not stand the cold winters and must be housed. No fruit need be expected in thus growing the plant, but the noble foliage, swaying in a gentle breeze, hardly ever perfectly still, is a delightful object on the lawn. One serious objection to this and other large-leaved plants is the whipping and injury by the wind; hence a sheltered place should be chosen.



BANANA PLANT.

The banana plant is extensively cultivated in the tropical regions of both hemispheres. Many botanists regard it as a mere variety of plantain. It grows to a height of fifteen or twenty feet and the stem terminates in a tuft of leaves from six to ten feet long, and one foot wide. Everybody is familiar with the fruit, that grows in immense bunches, has a delicious taste, and is very nutritive in character.

The Pharaohs were Syrians.—It has been shown by recent researches that Egypt has always been largely under the influence of foreigners. The Pharaohs themselves were of Syrian stock. An alabaster quarry in which the oppressed Jews and other Asiatics are supposed to have worked has been found.

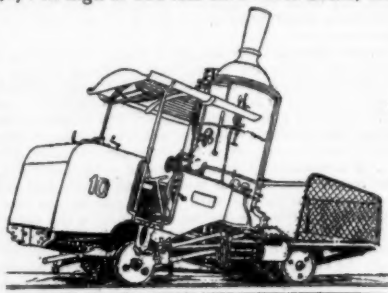
A Valuable Australian Tree.—A tree which grows in Australia is called the bunya-bunya; it is often 100 or 150 feet high, bearing a cone as large as a man's head. Its seeds, an inch and a half long and three-quarters of an inch broad, are greatly liked for food. The tree bears fruit only once in three years. The group of trees allotted to each family is hereditary property transmitted from generation to generation.

Important Discovery in Mexico.—A number of small images, formed in metal, were uncovered by the workmen in one of the oldest ruins of the district of Tlaxiaco, state of Oajaca, a few days ago. The images represent people of Oriental appearance and dress, as well as priests in their robes of sacrifice. They bear hieroglyphics of unknown characters and are elaborately wrought, with fine art lines shown in every curve. The images found thus far are of gold, either wholly or in part, and are coated with some unknown enamel, which has preserved them from all harm in the many years they have been buried in the soil. The find is the most important of the year in the domain of antiquities, and preparations are now being made to conduct a complete exploration of the Tlaxiaco ruins for further evidence of the ancient civilization which is known to have flourished in Southern Mexico.

Science and Industry.

A Railroad up the Jungfrau.—On the boundary line between the cantons of Bern and Valais is situated the snow-capped Jungfrau, 13,671 ft. high or 200 less than Mont Blanc, the giant among European mountains.

The road will ascend the mountains by a spiral course, passing by a tunnel under the Eiger glacier to Station Eiger; thence by tunnel in the direction of the "Monk" mountain to the Jungfrau-Joch, ascending from there to the so-called small plateau 12,500 ft. above the level of the sea. Thence a great elevator will hoist people to the mountain summit. The railroad will be 50,000 ft. long and electricity will be used for power and lighting purposes. The rack system of railroading, which is employed by the Mont Cenis, Righi, and Zermatt railways most successfully, will be used in pulling up the cars to the Jungfrau, being reinforced by elec-



MOUNTAIN RAILROAD LOCOMOTIVE.

tricity. The rack engine, as the illustration shows, has a boiler of the vertical order and four cylinders, the outer pair of which are connected with wheels running on ordinary rails, while the inner pair operate a central-toothed wheel, running on a single-racked rail. The two sets of cylinders can be worked separately or together.

A New French Rifle.—A retired French naval officer has invented a rifle that is capable of firing two kinds of explosive bullets. These bullets have immense power of penetration, and 100 of them weigh only 1,200 grams.

Storage Batteries—Fishing with Electricity.—The Syracuse (N. Y.) Storage Battery Company has a street car propelled by storage batteries running to Oneida. The total run on one charge of the batteries was 125 miles. The car, it is said, makes daily from 64 to 90 miles without a break in the service. The 125 mile run was made on a seven hour charge. There are 96 cells used in the car. The motor is a single 30 horse power, and is wound for 190 volts. The car is also lighted from storage cells.

Experiments are being made in the Mediterranean sea, in which porpoises are attracted by the means of the electric light, and, after being surrounded by a net, are killed by exploding dynamite in the water. In a recent experiment every one of the porpoises in the net was killed.

A Great Sanitary Discovery.—It has been found that sea water, electrolyzed, destroys all forms of bacteria. A small quantity that was lately introduced into the Croton water of New York instantly purified it. The city authorities of Havre, France, have laid mains in one of the most unsanitary districts of their city, and conducted through them this new agent. Sinks, drains, water-closets, sewage pipes, have been flushed with it, and all foulness and impurity have been at once corrected. Even rivers may receive the sewage thus purified without contamination. It will readily be appreciated how much this means for great cities; where so much filth is likely to accumulate.

An African Explorer.

We are indebted for a great part of our knowledge of equatorial Africa to Sir Samuel White Baker, who died recently at the age of seventy-three years. He was of stalwart form, great strength, and boundless energy. Nature formed him for a man of action. His earliest enterprise was the founding of an agricultural colony at Newerra Ellia in Ceylon; it was very successful. He went to Africa in 1861, fell in with Speke and Grant, and afterward explored the western arm of the Nile and discovered the lake known as the Albert Nyanza. Under the direction of the khedive of Egypt, in 1869 he set out with 1,000 men to suppress the slave trade and spread the cultivation of cotton. He was successful in both these objects. Fortunately for the world Baker was a charming writer, and in his books has left vivid descriptions of his adventures in Africa and elsewhere. The titles of his books are: "The Rifle and Hound in Ceylon" (1854, 1874), "The Albert Nyanza" (1866), "Ismalia" (1874), and "Cyprus" (1879).



SIR SAMUEL WHITE BAKER.

The Intercontinental Railway.

The engineers who have made the survey of the proposed intercontinental railway have finished their work and will make a report soon. The length of the road necessary to connect New York with Buenos Ayres appears to be 4,300 miles, which length could probably be reduced to 4,000 miles before the beginning of construction. The cost of grading, masonry, and bridges would approximate \$30,000 per mile. The cost per mile complete and ready for service, inclusive of a single track, sidings, buildings, machinery, rolling stock, and sundries, may be set down at \$50,000 or \$200,000,000 for the whole work. The estimate is in American gold. The region to be traversed parts naturally into two grand divisions, each 2,000 miles long, both of them tropical as to latitude, but the southern for the most part temperate in climate, because of its elevation above the sea. A map of the route of the road appeared in THE JOURNAL of Nov. 4, 1893.

California's New Port.

The new wharf just completed at Santa Monica, Cal., sixteen miles from Los Angeles, reaches out into the Pacific ocean nearly a mile, being 4,693 feet in length. It is 131 feet in width, has seven tracks, and affords wharf room sufficient for eight ships, each drawing twenty-eight feet, that being more than the draft of most of the largest freight ships in the world. This wharf was built by the Southern Pacific Company and the vast trade that has grown up already shows how far-sighted they were. Its extreme southern location is more in a direct line to China and Japan from Europe by way of the gulf ports, than New York and San Francisco. The distance across the continent is also less there, so that freight may be sent at least two days quicker by that route.

New Books.

All readers of newspapers have been informed of the marvelous feats of strength of Sandow, and all are interested in them, for people admire strength now as much as they did in the time of Hercules and Achilles. The question to ask, however, and one that interests educators is, how did he develop from a puny child to probably the strongest man living? A system that has been attended with such wonderful results in this case is pretty sure to produce good results in other cases. This system is explained in a book entitled *Sandow on Physical Training*, compiled and edited under Mr. Sandow's direction, by G. Mercer Adam, ex-captain of the Queen's Own Rifles. First there is a narrative of Sandow's own life, giving his boyhood and early life, his experience in Holland, as a wrestler in Italy, contests in England, and his triumphs in America. Then comes a practical section, in which Sandow has furnished detailed instructions for the per-

formance of his dumb-bell and bar-bell exercises; these will be useful to those who are training to be athletes and to all who wish to enjoy health and strength. The system of training is no mere theory, as it has brought forth abundant fruit. The book is quarto size and is finely printed with large type on smooth, heavy paper. It is richly illustrated from photographs expressly taken for the work by Sarony, of New York, Morrison, of Chicago, and White, of Birmingham, and from drawings by A. Casarin. It is handsomely bound in cloth. (J. Selwin Tait & Sons, New York.)

Students of the construction and working of machinery will find much help in *Elementary Lessons in Machinery and the Marine Steam-Engine*, compiled by Staff-Engineer J. Langmaid, R. N., and Engineer H. Gaisford, R. N. These lessons, which are illustrated by numerous plates, were prepared for the naval cadets in H. M. S. *Brittania*, and represent a systematic course of simple instruction preparatory to a more thorough study of the whole subject. The aim of the earlier lessons is to lay a sound

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basis of instruction in the elements of construction and mechanism, also in those mechanical details which students are usually expected to learn by work-shop experience, and are not found in steam engine books. Nothing is stated except the conclusions arrived at by experience, and the simplest examples are given to illustrate the various details of marine engines. The notes on the construction of a battle ship will serve as an introduction to the subject of modern ship construction. (Macmillan & Co., New York. \$2.00.)

A book for beginners and private workers with the microscope, giving practical methods which have stood the test of general use, has been prepared by Charles H. Clark, A. M., principal of Sanborn seminary, under the title of *Practical Methods in Microscopy*. The methods described are those that are employed by scientific men the world-over. In looking over books on the subject the author found nothing that exactly supplied the needs of beginners; the description of methods were so interwoven with other matters that the inexperienced student became confused, and, in many cases, was unable to separate the essential from the non-essential. The material furnished by various workers has been drawn upon for the book, but it has been arranged in accordance with the special needs of this work. In the different chapters are treated: Light and the microscope, some accessories of advanced work, polarized light and the polarizer, instructive practice in manipulation, methods of studying fresh objects, mounting objects for the microscope, practice mounting, botanical sections, sections of animal tissues, chemical crystals, rock sections by simple means, the study of bacteria, photo-micrography, and useful formulæ. The book is abundantly illustrated. The thorough and systematic study of the microscope, as here presented, will be of inestimable benefit to one who is to devote his time to scientific investigation. (D. C. Heath & Co., Boston. \$1.60.)

The thousands of readers who were instructed and entertained by *Ben Hur* will be pleased to know that the author has brought out another story, *The Prince of India*, which, like the former, deals with a historical subject. Some of the critics have found fault with Gen. Lew. Wallace for his romanticism and claim that his stories are not artistically constructed, yet for all that the perverse public will insist on reading them, as they have read *Ivanhoe* for the last three-quarters of a century. *The Prince of India*, as its title implies, deals with an Eastern subject, the scene being laid for the most part in Constantinople, and is full of that gorgeous coloring which such a book requires. Persons and

places stand out with all the distinctness of forms depicted on the canvas. This result is attained through the author's thorough study of the history of the period of which he treats and his carefully worded descriptions. This book is an improvement in the latter respect, even on *Ben Hur*. It will help wonderfully in understanding this wonderful city of the Bosphorus, which again and again beat back the Moslem hosts. History is too apt to give us the dry bones; here we have a glowing picture of life in an early century, including the warring nations with their antagonistic religions. The historical student will be greatly pleased and instructed by this story. (Harper & Brothers, New York. Two volumes.)

To most readers Coleridge is known as a poet. Although in the line of poetry he was one of the rarest geniuses of his time, his prose writings were hardly less remarkable. The last thirty years of his life were devoted to the study of some of the highest themes that can engage the human mind—the being of God, the nature and limit of knowledge, the principles of literary art, and the political constitution of his country. A little book containing selections from his *Prose Writings*, edited with introduction and notes, by Henry A. Beers, has just been published. The selections cover a wide field, a large proportion of them being on literary topics. There is a frontispiece portrait of Coleridge. (Henry Holt & Co., New York. Teachers' price, 35 cents.)

It is usual for autobiographies to pass over the period of youth with one or at most two or three chapters. *The Story of my Life*, by George Ebers, the German Egyptologist and novelist, is an exception. It deals with the period from childhood to manhood; the minuteness with which he describes his impressions, and the large place which he gives to school life, narrated in that charming style of which he is a master, give the book a high value to teachers as well as to those who delight in studying the evolution of a literary genius. He is particular to give his mother credit for all the influences that she brought to bear on him, and these may be said to be paramount, for he was a posthumous child, his father dying about two weeks before he was born. Among the influences that helped to develop his imagination he mentions fairy tales in particular. With great detail he gives the impressions formed at the theater, the zoological garden, in Holland, etc. The revolutionary period is described with that vividness with which readers of his stories are familiar. Then comes the narrative of the period of attendance at the school at Keilhau, of which Friedrich Fröbel was the founder, and a chapter on Fröbel's ideal of an education. A romance adds to the charm of the narrative of his school life, in which study was

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interspersed with forest rambles and musings. This book, translated by Mary J. Safford, ought to add much to Mr. Eber's reputation in this country. (D. Appleton & Co., New York.)

In our day the question of what sort of an audience the author should address and how he should address it, are very important ones and must be taken into account by one who wishes to succeed in literature. There was a time, however, when things were different. It is interesting to note the beginnings of what may be now called the author's profession. Probably no one has studied this question more deeply than Geo. Haven Putnam, whose volume, *Authors and their Public in Ancient Times*, has just been published. In this he sets forth the conditions and the relations with the public of literary producers, from the earliest times to the invention of printing. The material contained in this book was originally intended to form a preliminary chapter, or general introduction to a history of the origin and development of property in literature. The completion of the work being delayed, this part was published as a separate volume. Strictly speaking there was no such thing as literary property until some time after the invention of printing when instead of publishing classic writings the work of living authors began to be published. Just what sort of a public the author addressed in Chaldea, Egypt, India, Persia, China, Japan, Greece, Rome, Alexandria, and Constantinople, which the author seeks to show, is a

matter that will interest all who are engaged in the production of books. In doing this he has given us considerable insight into the mode of thought, life, and government of that time. It is a very readable book, and it is to be hoped that the author will soon finish the history to date. (G. P. Putnam's Sons, New York and London.)

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Our *Little Men and Women*, for March, comes to us from the Alpha Publishing Company (successors to Lothrop magazines), Boston. The best and most popular writers and artists for children not only are represented, but their brightest and best thought is particularly happy in its expression. It sings itself in rhyme and verse, and speaks in story, bits of history, hints at science, and old-time tales and wonders.

The hard-money men may find satisfaction in reading a paper by Munroe Smith, which appears in the April *Century*. He calls timely attention to the fact that Goethe, in the second part of "Faust," makes the father of all evil the original creator of fiat money.

Mrs. Celia Thaxter has written a charming account of her famous flower garden at the Isles of Shoals, and Mr. Childe Hassam has made for it twelve full-page and some smaller illustrations, which will be reproduced in color. The book is entitled *An Island Garden*; it is dedicated to the late Mrs. Hemenway, and will be published by Houghton, Mifflin & Co., just before Easter.

The Rev. Paul Sabatier's *Life of Saint Francis of Assisi*, which has been much admired abroad, will be issued here in an English translation by Charles Scribner's Sons.

Commissioner Harris writes of Dr. E. E. White's book just published by the American Book Company: "I have just received to-day a copy of your new book *School Management*, and I find it one of the most useful and practical books that has been written on the management of schools. The selection of materials for moral lessons and your analysis of the moral elements of character and your discussion of the question of punishment are so attractive, that I cannot lay aside the book without looking over every page. The chapter on mechanical devices will be very helpful to the young teacher, because he will find something that he can make use of at once. Most writings on this subject fail to give any real help."

A biography of Dr. J. G. Holland, well beloved "Timothy Titcomb," is to be issued shortly by the Scribners. It is written by Mrs. Thomas F. Plunkett, a life-long and intimate friend of Dr. Holland's, who has had exceptional opportunities for studying his personality and character.

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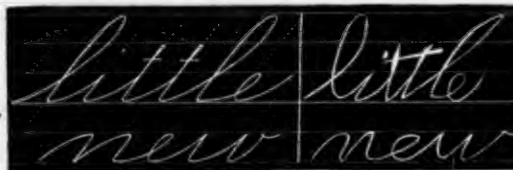
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The German Emperor is said to be trying to become the possessor of an enormous diamond, now lying in the innermost recesses of the bank of England, and lately of the Cape diamond fields. This gem is reported to weigh 971 carats. It appears that the jewelers or the German capital are constructing a new crown for the kaiser, and he has an idea that this particular gem would add luster to the diadem. Sir Robert Ball, in an address, described the diamond as consisting of an enormous number of molecules, swinging to and fro among themselves at a rate of some millions of vibrations a second, all in action together, and quivering with the shocks of impact. If we had a microscope which would magnify a million times we might be able to see this action; all we can do at present is to believe it. The cause of the diamond's extreme hardness and impenetrability is that, when a steel point is pressed against it the active molecules batter that point with such vehemence and rapidity that it cannot get beneath the crystalline surface. In cutting glass the molecules of the diamond drive the molecules of the glass before them, or mow them down like a mitrailleuse.—*Pall Mall Gazette*.

A fine list of music for the teacher, student, and home is offered by Oliver Ditson Co., Boston. The Science and Art of Music, by Robert Challoner, is a forcible work arranged in the interrogatory style. Ritter's History of Music is skillfully condensed and very thorough, while Ritter's Students' History of Music is a comprehensive study of music from the Christian era to the present time. Music lovers will find in the Birthday Book of Musicians and Composers a beautiful birthday register, containing the names of eminent musicians born and those who died on the day named. The Victory of Song is the crowning result of Mr. Emerson's long experience as a composer and teacher of music. Then they have books on method which we have not space to mention here, but which are all given in another column. The famous Classic series contains eighteen volumes of the best music known.

Among the writers of articles in *The Popular Science Monthly* for April are the well-known names of Andrew D. White, Herbert Spencer, Alfred R. Wallace, James D. Dana, and Joseph Le Conte. Dr. White contributes another chapter in the Warfare of Science series, dealing with "Theological Teachings Regarding the Animals and Man." The unnatural and dogmatic character of these teachings of bygone times is almost past belief. Under the title "Trusts their own Corrective," Mr. George A. Rich shows that combinations which have sought to make unreasonable profits have worked their own destruction. "In New Lights on the Problem of Flying," an illustrated article, Prof. Joseph Le Conte discusses some recent experiments by Prof. Langley, and admits that human flight is not the impossibility that he has declared it to be. Another interesting article in this number is the tribute of Herbert Spencer to the late Prof. Tyndall.

Tennyson says that, "in the spring a young man's fancy lightly turns to thoughts of love," and Tennyson was supposed to know, for he was a poet and made a special study of the sentiments. What do the teachers' thoughts turn to? If the teacher is going out of the business, they may turn to law or matrimony; if not, they will turn toward a better position. Those looking for one may obtain help of E. Miriam Coyriere, 150 Fifth Avenue, N. Y. Choice schools are also carefully recommended to parents.



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The March Review of Reviews presents a timely article on the "New York Constitutional Convention," by Dr. Albert Shaw. A delegate answers in response to Dr. Shaw's queries, the general scope of the convention's work and its probable action on certain specific questions of the highest importance, such as a provision for a greater New York, a reform of the state's judiciary system, the introduction of proportional representation, educational reforms, certain changes in city governments, uniform charters, city home-rule, and various other city reforms.

No one will dispute the assertion that a school library is about as necessary as text-books. If it is used judiciously what a chance for the teacher to help develop tastes for reading, to form habits of investigation! Some fine works for libraries are furnished by T. Y. Crowell & Co., Boston. Among these are A Dictionary of Quotations in Prose, George Eliot's Complete Works, Victor Hugo's Works, Tom Clifton, or Western Boys in Grant and Sherman's Army, Handy Volume Classics in Prose and Poetry, and A Dictionary of Quotations from the Poets.

The whole world has been traversed to find material for the Easter number of *The Literary Digest*. Almost every civilized language are represented. It is superbly illustrated, full of information; treating all questions of present interest, and all sides of those questions; presenting the leading articles in the foremost magazines and journals of the world. The Easter number was ready on Thursday, March 22.

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A review of the life and correspondence of Arthur Penrhyn Stanley, D. D., late dean of Westminster, by Rowland E. Prother, under the title of *Dean Stanley of Westminster*, appears in the issue of *Littell's Living Age* dated March 17, No. 2,593. The author of the review, a personal friend of the late dean, pays a touching tribute to his memory and indulges in some pleasant reminiscences and amusing anecdotes.

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